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TESTING



**EuroDOCSIS, EuroPacketCable (Multimedia)  
Certification/Qualification:  
Technical Requirements for ECW50-53**

--- Project Reference ---

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# 1 Specifications

In this chapter an overview is listed of the specifications and requirements that need to be supported by the submitted products.

To know which exact requirements are applicable, also some ECNs may need to be taken into account, as mentioned in chapter 2.

## 1.1 EuroDOCSIS 1.0 Specifications

A first set is the DOCSIS<sup>®</sup> 1.0 specification consisting of the following documents:

- SP-CMTS-NSII01-960702
- ANSI/SCTE 22-2 2002
- SP-CMCI-I07-020301
- SP-OSSI-BPI-C01-011119
- SP-OSSI-C01-011119
- SP-OSSI-RFI-C01-011119
- ANSI/SCTE 22-1 2002

The second set of documents consists of the following documents:

- Euro-DOCSIS\_spec.pdf
- Add-Euro-DOCSIS\_spec.pdf
- EuroDOCSIS\_STB\_spec.pdf

This second set of documents can be found on the public entry of the EuroDOCSIS section of the website [www.excentis.com](http://www.excentis.com). They specify deviations for EuroDOCSIS 1.0 with respect to DOCSIS 1.0. If something is mentioned in both document sets it is the second set that has priority.

## 1.2 EuroDOCSIS 1.1 Specifications

A first set is the DOCSIS 1.1 specification consisting of the following documents:

- SP-CMTS-NSII01-960702
- SP-BPI+-I12-050812
- ANSI/SCTE 22-2 2002
- SP-CMCI-I10-050408
- SP-OSSIV.1-C01-050907
- SP-RFIV1.1-C01-050907

The second set of documents consists of the following documents:

- Euro-DOCSIS\_spec.pdf



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Add-Euro-DOCSIS\_spec.pdf

Euro-DOCSIS\_1\_1\_OSS Req.pdf

EuroDOCSIS.BPI+Req\_v7.pdf

SP-STB-v3.0-I01-110411 (for set-top box products only, see section 1.7 for further info)

This second set of documents can be found on the public entry of the EuroDOCSIS section of the website [www.excentis.com](http://www.excentis.com). They specify deviations for EuroDOCSIS 1.1 with respect to DOCSIS 1.1. If something is mentioned in both document sets it is the second set that has priority.

### 1.3 EuroDOCSIS 2.0 Specifications

A first set is the DOCSIS 2.0 specification consisting of the following documents:

SP-CMTS-NSII01-960702

CM-SP-BPI+-C01-081104

ANSI/SCTE 22-2 2002

CM-SP-CMCI-C01-081104

CM-SP-OSSlv2.0-C01-081104

CM-SP-RFlv2.0-C02-090422

It is appendix F of CM-SP-RFlv2.0-C02-090422 that needs to be implemented, if something is mentioned in this appendix it takes precedence over the main section.

A second set of documents consists of the following documents:

EuroDOCSIS.BPI+Req\_v7.pdf

Euro-DOCSIS\_1\_1\_OSS Req.pdf

SP-STB-v3.0-I01-110411 (for set-top box products only, see section 1.7 for further info)

If a EuroDOCSIS 2.0 CPE is submitted with support for IPv6, then this must be implemented per:

CM-SP-DOCSIS2.0-IPv6-I05-111117

This second set of documents can be found on the public entry of the EuroDOCSIS section of the website [www.excentis.com](http://www.excentis.com). They specify deviations for EuroDOCSIS 2.0 with respect to DOCSIS 2.0. If something is mentioned in both document sets it is the second set that has priority.

### 1.4 EuroDOCSIS 3.0 Specifications

As EuroDOCSIS 3.0 is based on the DOCSIS 3.0 specifications two sets of documents specify the EuroDOCSIS 3.0 specification.

The first set is the DOCSIS 3.0 specification consisting of the following documents:

CM-SP-MULPIv3.0-I19-120809

CM-SP-OSSlv3.0- I19-120809

CM-SP-SECV3.0- I14-120809



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CM-SP-PHYv3.0-I10-111117 (Annex B for Europe!)

CM-SP-CMCIv3-I01-080320

It is Annex B of the CM-SP-PHYv3.0 specification that needs to be implemented. If something is mentioned in this annex then this takes precedence over the main section.

The second set of documents consists of the following documents:

EuroDOCSIS.BPI+Req\_v7.pdf

SP-STB-v3.0-I01-110411 (for set-top box products only, see section 1.7 for further info)

This second set of documents can be found on the public entry of the EuroDOCSIS section of the website [www.excentis.com](http://www.excentis.com). They specify deviations for EuroDOCSIS 3.0 with respect to DOCSIS 3.0. If something is mentioned in both document sets it is the second set that has priority.

NOTE - Mandatory CM support for the Energy Management feature is postponed until ECW53.

### **1.5 EuroPacketCable 1.0/1.5 Specifications**

The requirements for the different components subject to EuroPacketCable 1.0 or 1.5 certification are specified in the following documents which are available from the public entry from the Excentis website:

MTA Requirements EuroPacketCable Certification v8.0

CMTS Requirements EuroPacketCable Certification v8.0

CMS Requirements EuroPacketCable Certification v9.0

IPAT Requirements EuroPacketCable Certification v7.0

MG Requirements EuroPacketCable Certification v4.0

EuroPacketCable Certificate Requirements v9.0

EuroPacketCable L-Package Clarification v9.0

Please also note that the document “EuroPacketCable Scalability And Stability v6.0” available from the same website-location specifies minimum performance requirements for some components.

For EuroPacketCable 1.0 products the following PacketCable specifications are applicable:

PKT-SP-EC-MGCP-C01-071129

PKT-SP-PROV-C01-071129

PKT-SP-DQOS-C01-071129

PKT-SP-CODEC-C01-071129

PKT-SP-SEC-C01-071129

PKT-SP-TGCP-C01-071129

For EuroPacketCable 1.5 products the following PacketCable specifications are applicable:

PKT-SP-NCS1.5-I04-120412



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PKT-SP-PROV1.5-I04-090624

PKT-SP-DQOS1.5-I04-090624

PKT-SP-CODEC1.5-I04-120412

PKT-SP-SEC1.5-I03-090624

PKT-SP-TGCP1.5-I04-120412

For the MTA's POTS interface and for the IPAT architecture, the following ETSI specifications ([www.etsi.org](http://www.etsi.org)) are applicable:

ETSI TS 101 909-18 v1.3.1

ETSI TS 101 909-23 v1.1.1

For EuroPacketCable 1.5 products ECN PROV1.5-N-07.0391-6 must be supported with the following exceptions:

- Mandatory implementation of Excentis SIG MIB draft 09, Excetnis MTA MIB draft 06, EuroCableLabs extension SIG MIB draft 04, extension MTA MIB draft 01. Implementation of the IETF MTA and SIG MIBs (RFC 4682 and RFC 5098) is optional.
- If the Provisioning Server does not provide the option 'CL\_V4\_PACKETCABLE\_MIB\_ENV\_OPTION' the MTA must assume a value of 0x03 (EuroCableLabs) indicating the preference to use the EuroCableLabs/Excentis MIBs
- Support for EuroCableLabs MIBs in the MTA must be indicated in DHCP option 60 using TLV 5.23 with a value of 0x02 for EuroCableLabs as the issuing organization

### 1.6 EuroPacketCable 2.0 Specifications

For EuroPacketCable 2.0 E-DVAs the following specification is applicable: CEL-SP-PKT2.0-EDVA-I01-120319, which can be downloaded from the Excentis website.

### 1.7 EuroPacketCable Multimedia Specifications

The following PacketCable Multimedia specification is applicable: PKT-SP-MM-I06-110629.

Please also note that the document "EuroPacketCable Multimedia Stability" available on the Excentis website specifies minimum performance requirements.

### 1.8 Additional Specifications for CMs embedded in DVB-C Set-top Box

CMs embedded in DVB-C Set-top Box MUST implement:

SP-STB-v3.0-I01-110411

In case of a re-submission or of an OEM submission or of submission using the quick procedure for CM modules and this based on a product that already passed in the past still implementing SP-STB-v1.1-I02-061025, it is also allowed to support SP-STB-v1.1-I02-061025.



## 1.9 Cable Gateway requirements

A Cable Gateway (also called Cable Modem Router or CMR) MUST comply with all requirements specified in CM-SP-eRouter-I08-120329, unless overruled by the European specific requirements below:

- The Cable Gateway MUST support eRouter mode Disabled (Bridging)
- The Cable Gateway MUST support eRouter mode IPv4
- The Cable Gateway MUST support eRouter mode IPv6
- The Cable Gateway MUST support eRouter Dualstack
- The Cable Gateway MUST have DUID persistent across reboots, administrative reset or loss of power.
- The Cable Gateway MUST use DUID of DUID-LL type.
- When IPv6 is enabled (dual stack or IPv6 mode) then SLAAC (as described in eRouter) must be supported on CPE interface.
- The Cable Gateway MUST include DNS configuration options in its RA message as specified in RFC6106.
- The Cable Gateway MUST support DHCPv6 on the CPE interfaces according to eRouter CPE DHCPv6 requirements.
- The Cable Gateway MUST support IPv6 prefix delegation.
- During prefix delegation the Cable Gateway must accept up to /48 (/48 .. /64).
- The Cable Gateway SHOULD have functionality (proprietary MIB) to disable the local DHCPv4 server.
- The Cable Gateway SHOULD have functionality (proprietary MIB) to disable the local DHCPv6 server.
- The Cable Gateway MUST have a MIB (proprietary) to reset the device to its default behaviour for all functionality related to functionality defined by Cable Gateway (including eRouter).
- A stateful firewall MUST be on by default, it must be possible to get disabled.
- By default all incoming traffic is blocked unless opened by outgoing session.
- The device SHOULD support configurable firewall rules.
- The firewall MUST be manageable, enable/disable via proprietary MIB.
- The firewall MAY be disabled via CPE accessible webpage.
- The Cable Gateway MUST support DS-Lite B4 as per section 5 of RFC6333 except the changes below.
- The provisioning of DS-Lite MUST be according to RFC6334
- When an IPv4 packet which exceeds 1460 bytes is received with the DF (Don't fragment) bit SET: drop packet and send ICMP unreachable with code packet too big and recommended MTU size field is set to 1460.
- When an IPv4 packet which exceeds 1460 bytes is received with the DF not SET (CLEAR): fragment the packet.
- In the case of fragmentation on tunneled traffic the fragmentation must be possible on v4 and on v6, both modes MUST be supported and configurable (proprietary MIB). By default IPv4 MUST be used.
- TCP MSS Clamping MUST be supported. The Cable Gateway MUST overwrite the TCP-value to 1420 bytes.
- The Cable Gateway MAY support 6rd as defined in RFC5969 as a customer edge device.
- If supported, 6rd provisioning MUST be according to RFC5969.

## 1.10 L2VPN requirements

The CM-SP-L2VPN-I09-100611 specification of CableLabs is mandatory, with the following European specific modifications:

- If a subtype is not defined as Required or Optional in a location, the cable modem MUST silently ignore it when it appears in that location.
- A CM MUST support acquisition of at least 128 CPE MAC addresses, indicated in the Max CPE encoding in the config file as defined in [DOCSIS RFI].

NOTE - Version I10 of the L2VPN specification is not mandatory for ECW52. It may become mandatory from ECW53 (under discussion). In that case, also the following modifications will become applicable:



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- The CM MUST support the DefMACstatus, DefErrorCCM, and DefXconCCM defects [802.1ag].
- A CM MUST support the Loopback Messages.
- A CM MUST support Loopback status and results using the 'LbrIn', 'LbrOut' and 'TransmitLbmResultOK' objects from the dot1agCfmMepTable [802.1ag].
- A CM MUST set the default value of the LBR timeout to 5 seconds.
- A CM MUST support the Linktrace Messages and processes as defined in [802.1ag]
- A CM MUST support Linktrace status and results using the 'TransmitLtmResult', 'LtmTransmitted' and 'LtrReceived'





## 2 ECN Requirements

For any submission, whether it is a EuroDOCSIS 1.0/1.1/2.0/3.0, EuroPacketCable 1.0/1.5/2.0 and/or EuroPacketCable Multimedia submission, all ECNs (Engineering Change Notices) released by CableLabs up to (and including) a certain date must be implemented. This date is also called the ECN cut off date.

The following table lists the ECN cut off dates for ECW50-53. It is also indicated with which certification wave at CableLabs these correspond.

	<b>ECN cut off date</b>	<b>CableLabs CW</b>
ECW50	19 October 2012	CW97
ECW51	19 October 2012	CW99
ECW52	1 March 2013	CW101
ECW53	12 July 2013	CW103

ECNs of a later date MAY be implemented, but if done this must be stated in the Executive Summary (which is part of the requested submission documentation).

For the ECNs please check [www.cablelabs.com](http://www.cablelabs.com).



### 3 MIB Requirements

For EuroDOCSIS products the same MIB requirements apply as for DOCSIS products. This includes the current version of the Testing MIB as posted by CableLabs on DocZone.

For EuroPacketCable 1.0 and 1.5 E-MTA products, the aforementioned IETF drafts of the MTA/SIG MIBs rooted under the Excentis MIB branch are applicable. The required versions of these drafts (i.e. Excentis MTA MIB draft 6 and SIG MIB draft 9) can be downloaded from the Excentis web page. In SIG MIB draft 9 one correction is necessary:

```
pktcSigDevMultiFreqToneTable OBJECT-TYPE  
.....  
::= { pktcSigDevConfigObjects 35 } -> must be 33
```

For EuroPacketCable 1.5 E-MTA products the MTA and SIG extension MIBs are also required, which are rooted under the EuroCableLabs MIB tree (extension SIG MIB draft 04, extension MTA MIB draft 01). These MIBs can also be downloaded from the Excentis website. Implementation of the IETF MTA and SIG MIBs (RFC 4682 and RFC 5098) is optional. Support of the above MIB drafts also implies that an MTA must use these MIBs in its provisioning flow (SNMP signalling, configuration file etc).

For EuroPacketCable 2.0 E-DVA products, the required MIBs are specified in the aforementioned EuroPacketCable 2.0 E-DVA specification. Two extra corrections are required though:

1. ECN MIB-EXSIG1.5-N-12.0689-2 adds plan loss configuration parameters for the E-MTA. The two applicable MIBs objects were added to the `pktcEnNcsGroup`. This group is also mandatory for EP2.0 E-DVAs (through the E-DVA MIB compliance statements). But for an EDVA there are already two MIBs for this (`pktcEDVAPrLossDA`, `pktcEDVAPrLossAD`). So, the two new loss MIBs from the `pktcEnNcsGroup` are not applicable for a EuroPacketCable E-DVA.
2. As the functionality offered by the `[PKTC-IETF-SIG-MIB]:pktcSigDevVmwiSigProtocol` MIB is already covered by the functionality of the `[CL-PKTC-EUE-EDVA-MIB]:pktcEDVAMWISignalTypesTable`, the `[PKTC-IETF-SIG-MIB]:pktcSigDevVmwiSigProtocol` MIB is not applicable for a EuroPacketCable 2.0 E-DVA and must be not-accessible.



## **4 Optional features**

### **4.1 Introduction**

In the next section a number of optional features/interfaces are listed. The submitting vendor must indicate if it supports any of the optional features in part 4 (Optional Features List) of the Admission Application Forms.

The supported optional features will be tested, and if the product is compliant to the optional feature it will also be part of the public certification/qualification statement.

If the product is not compliant to the optional feature, it will not be reason for failing the product.

### **4.2 Overview optional features**

For EuroDOCSIS 2.0 CMs support for IPv6 is optional.

For EuroDOCSIS 3.0 CMs support of PHS, Extended Upstream Transmit Power and Extended Upstream Frequency Range (5-85 MHz) is optional.

For EuroDOCSIS 2.0 and 3.0 CMTSs, support for PHS and S-CDMA is optional for certification. However, in case S-CDMA is supported, the MSC feature (Maximum Scheduled Codes) must be supported. S-CDMA is not optional for CMTSs that are submitted against the S-CDMA feature set (for feature set based submissions).

For EuroPacketCable 1.5 E-MTAs support of the following features is optional for certification: silence suppression, basic and hybrid provisioning flow, codecs other than PCMA/PCMU, Multiple Grants Per Interval, V.152 Voice Band Data.

For EuroPacketCable 2.0 E-DVAs support of the following features is optional for certification: IPv6 (including Dual Stack and ICE-Lite), VAD (silence suppression), GRUU, Preconditions, TLS, Certificate Bootstrapping, V.152, T.38 over RTP, non-G711 codecs, NFTR, and finally an "optional call feature set" which consists of DND, Subscriber Programmable PIN, Customer-Originated Call Trace, Call History, Operator Services: Busy Line Verification & Operator Interrupt. Note: IPv6 (including Dual Stack and ICE-Lite) will become mandatory from ECW54 on!

For EuroPacketCable Multimedia products support of the Event Messaging interface is optional for certification.



## 5 Test plans

### 5.1 EuroDOCSIS

For EuroDOCSIS testing the DOCSIS ATPs are followed as much as possible, with adjustments where necessary. For these ATPs please check [www.cablelabs.com](http://www.cablelabs.com) (DocZone).

For ED3.0 products EuroDOCSIS-3.0-CM-ATP-20110411 is also applicable. The PHY.7-Wi-Fi test herein also applies to EuroDOCSIS 2.0 products.

For ED2.0 products that are submitted for ED2.0 + IPv6, test plan EuroDOCSIS-2.0+IPv6-ATP-20110801 becomes applicable.

Additionally for 1.1/2.0/3.0 products two specific test plans are relevant as well: MAC-100 and the corrected OSS-13.

These EuroDOCSIS test plans are available on the EuroDOCSIS participants portal of the Excentis website.

### 5.2 EuroPacketCable (Multimedia)

For EuroPacketCable 1.0/1.5/2.0 and EuroPacketCable Multimedia testing the applicable test plans can be found on the secured pages of the Excentis website.

### 5.3 Cable Gateway

For Cable Gateways the applicable test plans can be found on the secured pages of the Excentis website.

### 5.4 L2VPN

For CMs that support L2VPN the applicable test plans can be found on the secured pages of the Excentis website.



## 6 Revision History

Revision 01 – First release

Revision 02 – Added some clarifications on the MIB requirements for EP2.0 in section 3.

Revision 03 – For a ED3.0 CM, the Extended Upstream Frequency Range (5-85 MHz) is now officially an optional feature.

Revision 04 - For EuroPacketCable 2.0 E-DVAs, support for IPv6 (including Dual Stack and ICE-Lite) is optional during ECW50-53. From ECW54 on IPv6 (including Dual Stack and ICE-Lite) will become mandatory.

Revision 05 – Added requirements for Cable Gateway and modems that support L2VPN.

